#8

CONSTRUCTION PLANS FOR SUNPORT BOULEVARD – PHASE I

(STA. 65+00 TO STA. 95+00)

TPE-HDP-9253(1)

CN-9441

BERNALILLO COUNTY

Approved Richard B. Rafuse Date 6/15/94
CITY ENGINEER

Approved Carroll D. Young Date 7-15-94
SECRETARY
P.E./L.S. NO. 4480

RECEIVED
APR 4 1995
HYDROLOGY DIVISION

JUL 21 1994

CITY OF ALBUQUERQUE, N.M.
PUBLIC WORKS DEPT.
ENGINEERING GROUP/TRANSPORTATION

REV	SHEETS	CITY ENGR.	DATE	USER DEPT.	DATE	USER DEPT.	DATE

APPROVAL OF REVISIONS

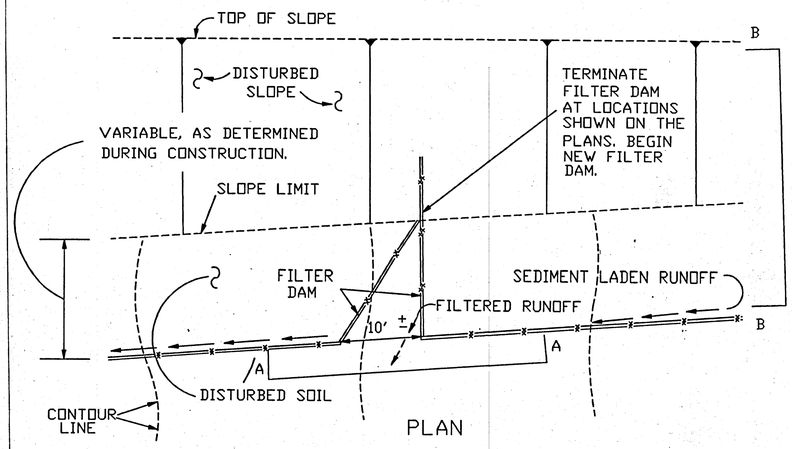
REGISTERED PROFESSIONAL ENGINEER
STATE OF NEW MEXICO
No. 4739
THORNTON D. SCHWEIN
6-14-94

MOLZEN-CORBIN & Associates

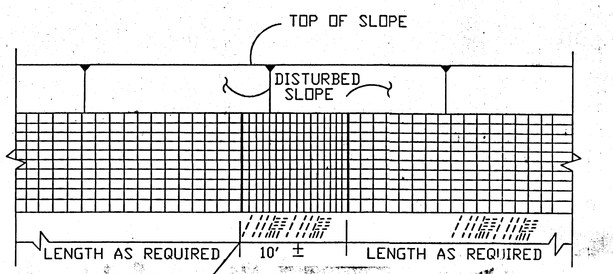
PROJECT NO. C.O.A. 4044-90

SHEET 1-1

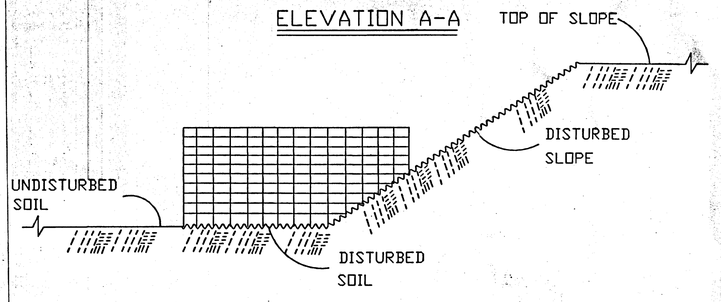
E 1=1 06/14/94



PLAN

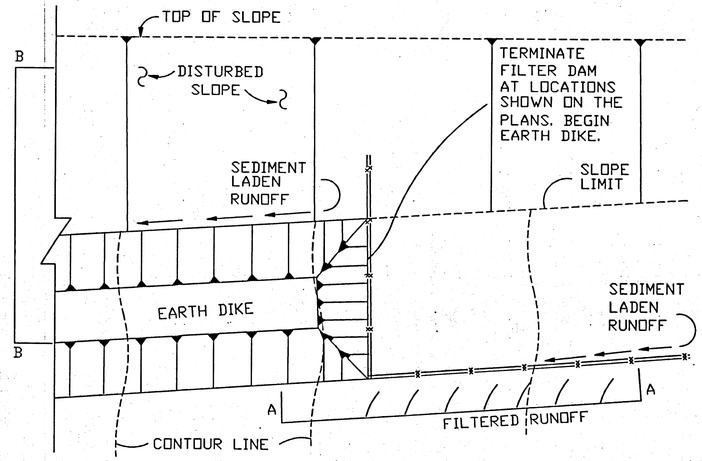


ELEVATION A-A



ELEVATION B-B

TYPICAL INSTALLATION FOR FILTER DAM ON SLOPES WITH LONGITUDINAL SLOPE *



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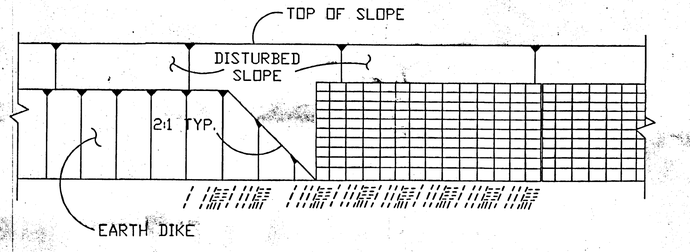
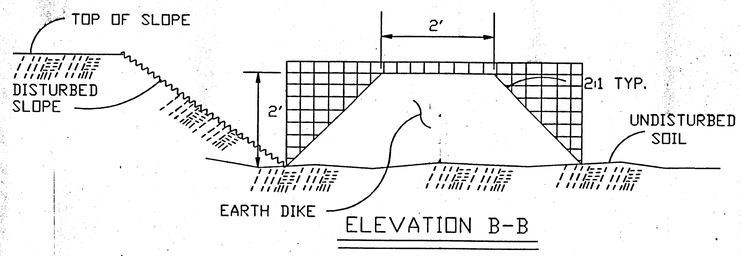


ELEVATION A-A



ELEVATION B-B

TYPICAL INSTALLATION FOR FILTER DAM WITH EARTH DIKE ON SLOPES WITH LONGITUDINAL SLOPE *

TEMPORARY EROSION & SEDIMENT CONTROL MEASURES (T.E.S.C.M.)

GENERAL NOTES:

1. THE SOIL RETENTION BLANKET INSTALLATION DETAILS SHOWN FOR DITCH LINERS SHALL BE USED FOR ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES UTILIZING SOIL RETENTION BLANKETS UNLESS OTHERWISE NOTED.
2. ROCK PLATING USED IN THE TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHOWN ON THESE SHEETS SHALL HAVE A MINIMUM THICKNESS OF 9 INCHES UNLESS OTHERWISE INDICATED.
3. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES PLACED WITHIN THE CLEAR ZONE SHALL BE INSTALLED WITH 8:1 SLOPES PARALLEL TO TRAFFIC AND 3:1 SLOPES PERPENDICULAR TO TRAFFIC WHERE APPLICABLE. FOR SEDIMENT TRAPS LOCATED WITHIN THE CLEAR ZONE, THE MAXIMUM HEIGHT OR EXCAVATED DEPTH OF THE TRAP SHALL NOT EXCEED 12 INCHES.
4. SEDIMENT BASINS AND TRAPS SHALL BE CLEANED OF ACCUMULATED SEDIMENT WHEN APPROXIMATELY 50% FILLED.
5. FILTER DAMS SHALL BE CLEANED OF ACCUMULATED SEDIMENT WHEN THE DEPOSITS REACH APPROXIMATELY ONE-HALF THE HEIGHT OF THE FILTER DAM.
6. DITCH LINER SHALL BE INSTALLED UPON INITIATION OF EARTH ACTIVITIES AND MAINTAINED AS PRACTICAL UNTIL STABILIZATION IS COMPLETED AND ACCEPTED. DITCH LINER MAY BE REMOVED FOR PERIODS OF TIME AS REQUIRED DURING CONSTRUCTION TO COMPLETE ADJACENT IMPROVEMENTS.

* THE CONTRACTOR MAY CONSTRUCT AN EARTH DIKE, AS SHOWN OR RELOCATE THE FILTER DAM AS CONSTRUCTION PROGRESSES. NO DIRECT PAYMENT SHALL BE MADE FOR RELOCATION OF THE FILTER DAM.

NO.	DESCRIPTION	DATE	BY
3			
2	REVISED FILTER DAM DRAWINGS	10-6-93	UH/BL
1	MINOR TYPING REVISIONS	8-27-93	BSL

REVISIONS (OR CHANGE NOTICES)

NEW MEXICO STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

CA DD

TEMPORARY EROSION & SEDIMENT CONTROL MEASURES

LAYOUT BY	APPROVAL
DRAWN BY	RECOMMENDED ENGINEER DATE
CHECKED BY	APPROVED DESIGN BUREAU CHIEF DATE

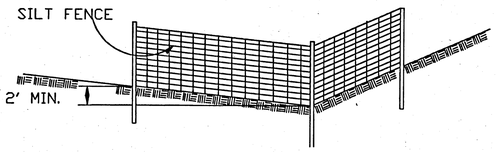
DRAWING 050 SHEET 1 OF 4

SHT. 2-35

APR 4 1995

STANDARDS-MISC DRAW54A 8-27-93

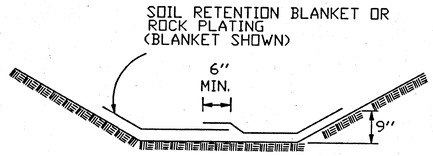
NOTE: WHEN SILT FENCE IS USED FOR FILTER DAM INSTALLED IN DITCHES A SUPPORTING FENCE SHALL BE PROVIDED AND THE POST SPACING SHALL BE 10' MAXIMUM.



ELEVATION - FILTER DAM
(SILT FENCE OPTION)

SILT FENCE NOTES:

1. POST SPACING SHALL BE 4 FT. MAXIMUM W/O SUPPORTING FENCE, 10 FT. MAXIMUM WITH SUPPORTING FENCE.
2. POSTS FOR 4 FT. MAXIMUM POST SPACING SHALL BE 2 INCH SQUARE OR HEAVIER WOOD POSTS OR STANDARD T OR U SECTION STEEL POSTS WEIGHING NOT LESS THAN 1.0 LB. PER LINEAR FOOT. POSTS FOR 10 FT. MAXIMUM POST SPACING SHALL BE 4 INCH SQUARE OR HEAVIER WOOD POSTS OR STEEL POSTS AS SPECIFIED ABOVE.
3. SUPPORTING FENCE SHALL BE WIRE MESH (14 GA. MIN., 6 INCH MAX. MESH OPENINGS) OR SNOW FENCE.
4. SUPPORTING FENCE SHALL BE FASTENED SECURELY TO POSTS WITH STAPLES OR WIRE TIES. FILTER FABRIC SHALL BE FASTENED SECURELY TO SUPPORTING FENCE WITH WIRE TIES SPACED AT 24 INCH CENTERS ALONG THE TOP AND MID-SECTION. WHEN A SUPPORTING FENCE IS NOT USED, FILTER FABRIC SHALL BE SECURELY FASTENED TO POSTS WITH STAPLES OR WIRE TIES.



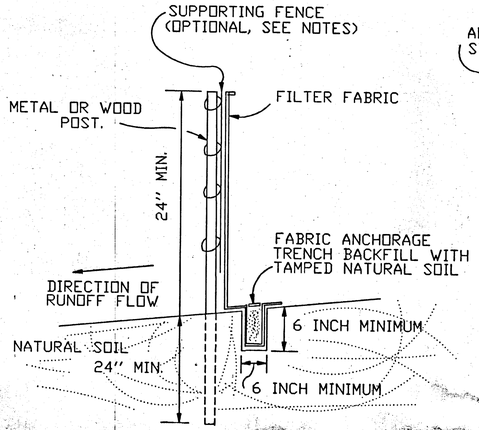
SECTION B-B

DITCH LINER NOTES:

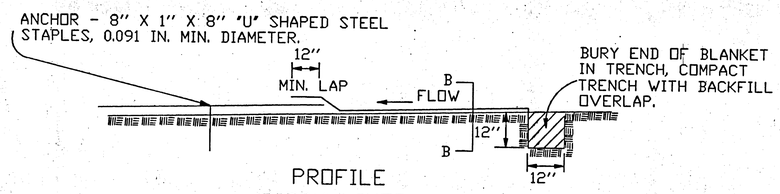
1. THE DITCH LINER WIDTH REQUIRED SHALL BE IN ACCORDANCE WITH THESE DETAILS UNLESS SPECIFIED OTHERWISE.
2. THE SOIL RETENTION BLANKET INSTALLATION SHOWN OUTLINES MINIMUM REQUIREMENTS. MANUFACTURERS RECOMMENDATIONS SHALL BE USED IF THEY ARE MORE STRINGENT.
3. WHEN DITCH LINER IS SPECIFIED, EITHER SOIL RETENTION BLANKETS OR ROCK PLATING MAY BE PROVIDED.

NOTE: STONE SHALL CONSIST OF 1" TO 3" WASHED GRAVEL.

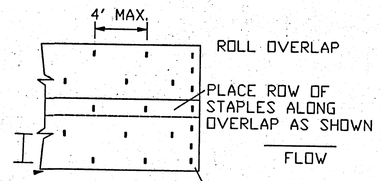
ELEVATION - FILTER DAM
(STONE DAM OPTION)



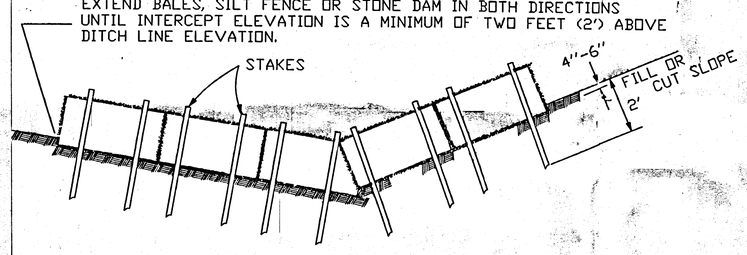
ELEVATION - FILTER DAM
(SILT FENCE OPTION)



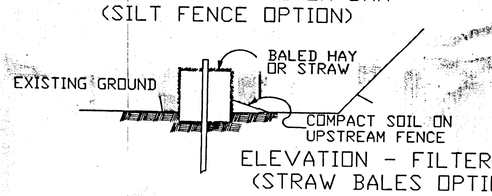
PROFILE
DITCH LINER



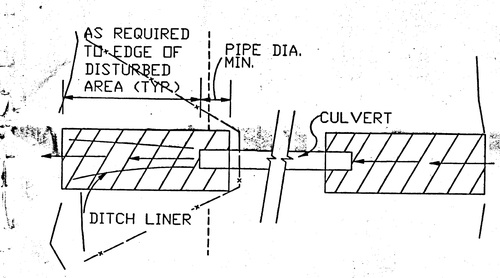
SOIL RETENTION BLANKET
STAPLE PATTERN



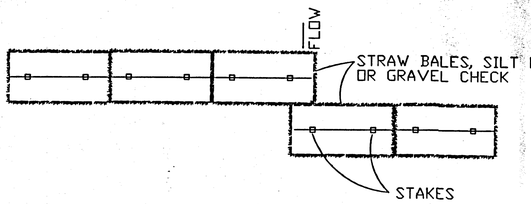
ELEVATION - FILTER DAM
(STRAW BALES OPTION)



ELEVATION - FILTER DAM
(STRAW BALES OPTION)



TYPICAL DITCH LINER
INSTALLATIONS AT CULVERTS

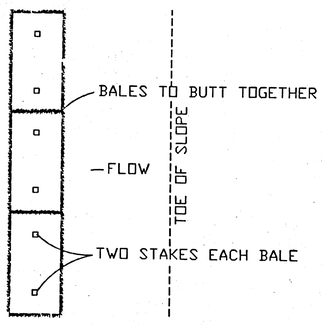


FILTER DAM
(FOR DITCHES)

SEE FILTER DAM (FOR SLOPES) FOR ADDITIONAL CONSTRUCTION DETAILS OF SILT FENCE AND STRAW BALES.

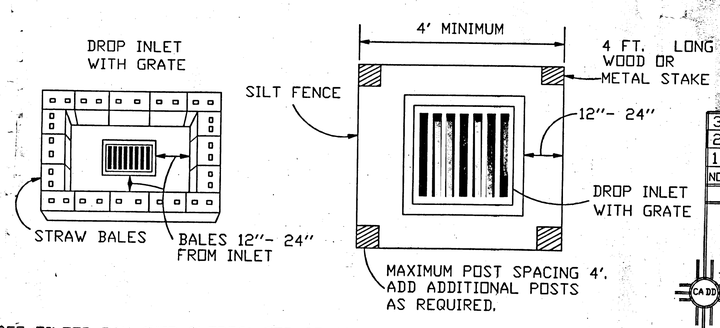
STRAW BALES FILTER DAM NOTES:

1. EMBED BALES 4 TO 6 INCHES INTO GROUND.
2. IN AREAS WHERE BALES MAY BE ALLOWED TO REMAIN IN PLACE, WOOD STAKES MUST BE USED. IN OTHER AREAS ALTERNATE STAKES MAY BE USED.
3. LOOSE HAY OR STRAW SHALL BE STUFFED BETWEEN BALES TO FILL VOIDS.
4. STAKES SHALL BE 2"X 2" WOOD, REBAR (#4 MIN.) OR STANDARD STEEL POSTS DRIVEN 2' MIN,. INTO GROUND.



PLAN

FILTER DAM
(FOR SLOPES)



SEE FILTER DAM (FOR SLOPES) FOR CONSTRUCTION DETAILS OF SILT FENCE.

'CHECK DAM

CHECK DAM SHOWN FOR DROP INLET, LAYOUT FOR CURB INLETS SIMILAR.

NO.	DESCRIPTION	DATE	BY
3			
2			
1	MINOR TYPING REVISIONS	8-27-93	BSL

REVISIONS (OR CHANGE NOTICES)

NEW MEXICO STATE
HIGHWAY AND TRANSPORTATION
DEPARTMENT

CADD

T.E.S.C.M.
FILTER DAM ALTERNATES &
RETENTION BLANKET DETAILS

LAYOUT BY	APPROVAL
DRAWN BY	RECOMMENDED ENGINEER DATE
CHECKED BY	APPROVED DESIGN BUREAU CHIEF DATE

DRAWING 050 SHEET 2 OF 4

STANDARDS.MISC._DRAW$30.8-27-93

SHT. 2-36

REGISTERED
APR 4 1995

LOT 5B
AIRPORT TECHNICAL CENTER

LOT 6B
AIRPORT TECHNICAL CENTER

UNIVERSITY BOULEVARD S.E.
(105' R.O.W.)

UNIVERSITY OF NEW MEXICO
SOUTH GOLF COURSE

EXISTING 12" PVC SANITARY SEWER

EXISTING STORM SEWER

EXISTING FENCE

EXISTING METAL GUARDRAIL

TBM = RR SPIKE IN POWERPOLE ELEV. = 5200.94'

PAINTED STRIPES NO PARKING

ROOF FLOWS FROM BOTH BUILDINGS TO BE COLLECTED IN GUTTERS AND RELEASED INTO SOUTH PARKING AREA.

FENCED STORAGE

CONC. PARKING BUMPERS THIS AREA ONLY.

LOADING DOCK AREA W/ RETAINING WALLS BOTH SIDES.

STOP EXTRUDED CURB AT C.R.

EDGE OF EXISTING ASPHALT

REMOVE GUARDRAIL THIS AREA

EXISTING 36"CMP

EXISTING METAL GUARDRAIL

EXISTING 1/4"AC WATERLINE

TW 175.9 (WEST)
TW 176.4 (NORTH)
FL 171.7

TW 175.9 (WEST)
TW 176.4 (SOUTH)
FL 171.7

TW 176.4
FL 171.7

MWSE = 175.9
VOL = 1951.0 CF

EXISTING SANITARY MANHOLE
RIM ELEVATION = 5168.21
INV. ELEVATION = 5147.71

EXISTING STORM MANHOLE
RIM ELEVATION = 5161.27
INV. ELEVATION = 5149.77

EXISTING SANITARY MANHOLE
RIM ELEVATION = 5160.91
INV. ELEVATION = 5147.01

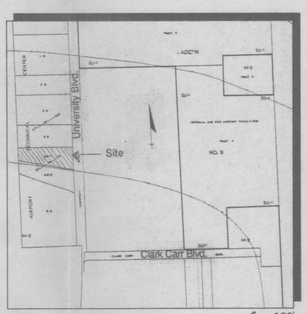
DETAILS FOR STRUCTURAL PERMIT TO BE SUPPLIED UNDER SEPERATE DOCUMENT.

KEYED NOTES

1. PROVIDE 5' SHOULDER - MAX. SLOPE = 2% BEFORE BEGINNING 1H FILL SLOPE
2. CONCRETE LINED DETENTION POND - SEE NOTES FOR DESIGN CRITERIA REGARDING POND DEPTH AND DESIGN
3. EXTEND FILL OFF-SITE AT MAX 2H SLOPE TO TOE OF SLOPE. SAME OWNER BOTH PROPERTIES.
4. PROVIDE 5' SHOULDER - MAX SLOPE = 2% BETWEEN PROPERTY LINE AND BEGINNING OF CUT / FILL SLOPE.
5. CONSTRUCT 100 LF CONCRETE GRADE WALL. T.G.W. 18" ABOVE GRADE.
6. REDEFINE EXISTING 36" CMP OUTLET AND FLOWS FROM FRONT GRADER DITCH TO LOT 6B. PROVIDE RIP-RAP AS SHOWN FOR EROSION PROTECTION. SAME OWNER BOTH PROPERTIES. SEE DETAIL 11 - SHEET 2 OF 2.
7. INSTALL 18" DIAMETER CONCRETE PIPE DROP INLET WITH BEEHIVE GRATE TOP. SLOPE PAVING TO INLET FROM ALL DIRECTIONS. SEE DETAIL 5 - SHEET 2 OF 2.
8. CONSTRUCT 6" HIGH EXTRUDED CONCRETE CURB ON PAVEMENT PARKING AREAS. SEE DETAIL 1 - SHEET 2 OF 2.
9. PROVIDE 1 OPENING IN PARKING ISLAND FOR DRAINAGE. CONTINUE CONCRETE GUTTER THROUGH THIS AREA.
10. CONSTRUCT 2' WIDE STANDARD CURB AND GUTTER (SLOPE = 0.5%) SEE DETAIL 4 - SHEET 2 OF 2.
11. INSTALL TENSAR GEOGRID PER MANUFACTURER'S SPECIFICATIONS ON SLOPES INDICATED FOR EARTH STABILIZATION. APPLY FROM EDGE OF PAVEMENT TO TOE OF SLOPE. SEED AREA PER C.O.A. STANDARD SPECIFICATION SECTION 1011, CLASS F-L (NO WATERING). USE #830 DRYLAND BLEND NATIVE SEED APPLIED AT 2 LBS / 1000 SF. USE 16-8-8 CHEMICAL FERTILIZER APPLIED AT 4 LBS / 1000 SF.
12. (2A) TURNED DOWN WALK. SEE DETAIL 2 - SHEET 2 OF 2.
13. INSTALL NEW 12" DIA. ULTRA-RIB PVC STORM DRAIN BETWEEN DROP INLETS AND DETENTION POND. SEE SHEET 2 OF 2 FOR PROFILES / DETAILS.
14. INSTALL 84 LF POLYDRAIN SYSTEM TRENCH DRAIN IN ACCORDANCE WITH MANUFACTURERS DETAILS. TOP WIDTH = 6.1 INCHES, RADIUSED BOTTOMS WITH BUILT-IN SLOPE OF 0.60% GRATE TO BE IN-LAY TYPE. TRENCH SHALL DISCHARGE HORIZONTALLY INTO A 6" PVC STORM DRAIN PIPE.
15. 6" PVC FROM TRENCH DRAIN TO STORM INLET.
16. CONNECT 1-8" ULTRA-RIB PVC OUTLET FROM THE DETENTION POND TO THE EXISTING STORM DRAIN MANHOLE. TAP TO EXISTING LINE AND GROUT FOR WATERTIGHT CONNECTION. SEE PROFILE / DETAILS SHEET 2 OF 2.
17. INSTALL 48" DIAMETER CONCRETE PIPE DROP INLET WITH 29" DIA. GRATE TOP. SLOPE PAVING TO INLET FROM ALL DIRECTIONS. SEE DETAIL 3 - SHEET 2 OF 2.
18. CONSTRUCT CONCRETE GRADE WALL FROM CURB RETURN TO CURB RETURN ON SOUTH SIDE OF EACH DRIVE ENTRANCE. 36 LF AT NORTH ENTRANCE AND 26 LF AT SOUTH ENTRANCE.
19. INSTALL 18" DIA. ULTRA-RIB PVC TO CARRY FLOWS BENEATH EACH DRIVE ENTRANCE. SEE D/G PLAN FOR INVERTS.
20. CONSTRUCT 6' HIGH STANDARD CHAIN LINK FENCE AND GATE PER C.O.A. DETAIL #2252 ALONG PERIMETER OF CONCRETE POND.

LEGEND

	SIDEWALK, CURB AND GUTTER (EXISTING, PROPOSED)
	PROPOSED ASPHALT
	BUILDING (EXISTING, PROPOSED)
	PROPERTY LINE
X 65.7	EXISTING SPOT ELEVATION
20	EXISTING CONTOUR
75.2	PROPOSED SPOT ELEVATION
30	PROPOSED CONTOUR
	SURFACE FLOW DIRECTION (EXISTING, PROPOSED)
LA	LANDSCAPED AREA
TGW	TOP OF GRADE WALL (< 18" HIGH)
TRW	TOP OF RETAINING WALL (> 18" HIGH)
TA	TOP OF ASPHALT
TC	TOP OF CURB
FL	FLOW LINE
FF	FINISHED FLOOR
R/W	RIGHT OF WAY
PL	PROPERTY LINE
PP	POWER POLE
C.R.	CURB RETURN



VICINITY MAP N-15

FLOOD HAZARD MAP

RESUBMITTAL: 3/10/93

1. REVISE HYDROGRAPH - SHEET 2 OF 2
2. ADD INFO. RE: DETENTION POND
3. PROVIDE FLOW RATE AND VELOCITY INFO. TO STORM DRAIN PROFILES (2 OF 2)
4. ENERGY DISSIPATION NOTES ADDED (2 OF 2)
5. DETENTION POND NOTES MODIFIED (2 OF 2)

Chris Weiss 3/10/93
CHRISTOPHER L. WEISS DATE

RECEIVED
MAR 11 1993
HYDROLOGY

REVISIONS
1 3/10/93

DESIGNED	D.P.
DRAWN	D.P.
CHECKED	C.L.W.

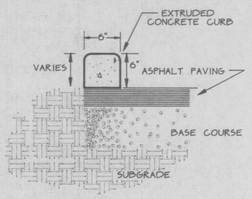
REGISTERED PROFESSIONAL ENGINEER
CHRISTOPHER L. WEISS
NEW MEXICO
9889
12-31-93

C.L. WEISS ENGINEERING, INC.
POST OFFICE BOX 97 SANDIA PARK, N.M. 87047 - (505) 281-1800
1100 ALVARADO DR. NE ALBUQUERQUE, N.M. 87110 - (505) 266-3444

AIRBORNE
DRAINAGE / GRADING PLAN

SHEET 1 OF 2

D:\GHANTY\AIR\DG1GF2 02/12/93 15:42

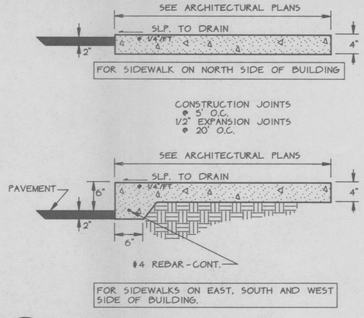


GENERAL NOTES

1. PROVIDE CONTRACTION JOINTS @ 10' O.C. MAX. PROVIDE EXPANSION JOINTS ADJACENT TO BLDGS, WALLS AND CURB RETURNS
2. EDGES SHOULD BE REMOVED WITH 3/8" EDGING TOOL

1 EXTRUDED CONCRETE CURB

N.T.S.

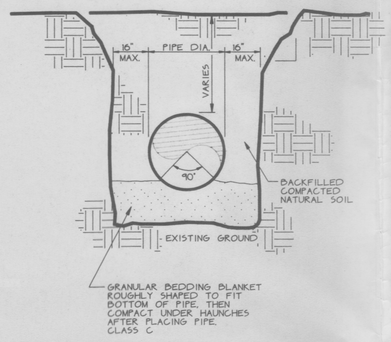


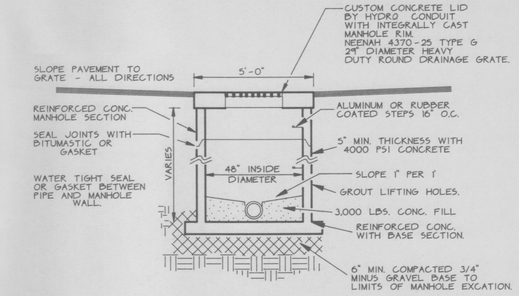
2 CONCRETE WALKS

N.T.S.

NOTES:

1. BACKFILL AREA SURROUNDING PIPE ON SIDES AND TOP (16" MAX) WITH NATURAL SOIL MATERIAL. EXCLUDE ROCKS, LUMPS AND DEBRIS FROM BACKFILL MATERIAL.
2. GRANULAR BEDDING MATERIAL SHALL BE WELL GRADED WITH 100% PASSING THE 3/8" SIEVE AND NOT MORE THAN 10% PASSING THE NO. 200 SIEVE. MANY SITE SOILS MEET THIS SPECIFICATION.
3. PONDING OR JETTING PIPE BACKFILL WILL NOT BE PERMITTED.
4. THE PIPE SHALL BE PROTECTED BY A COVER OF AT LEAST 3' BEFORE PERMITTING HEAVY CONSTRUCTION EQUIPMENT TO PASS OVER DURING CONSTRUCTION STAGE.



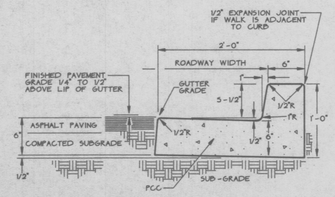


1. 4'-0" INSIDE DIAMETER MANHOLE
2. PRECAST MANHOLE SECTIONS AND TOP SLAB SHALL CONFORM TO ASTM C478.
3. USE NON-SHRINK GROUT FOR JOINTS, FILLETS AND PIPE PENETRATIONS

3 DROP INLET

ALL LOCATIONS EXCEPT POND INLET

N.T.S.

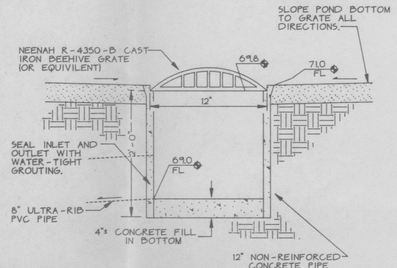


GENERAL NOTES

1. EDGES NOT SPECIFICALLY DIMENSIONED SHALL BE EDGED WITH A 3/8" EDGING TOOL
2. STANDARD CURB AND GUTTER REQUIRE FULL FORM ON ALL FACES.
3. CONSTRUCTION JOINTS AT 6' O.C. MAX.
4. 1/2" EXPANSION JOINTS AT CURB RETURNS AND EACH SIDE OF DRIVES

4 STANDARD CURB + GUTTER

N.T.S.



5 DROP INLET

LOCATED IN POND AREA

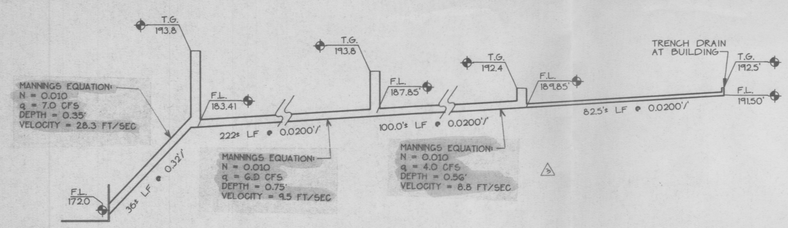
N.T.S.

6 PIPE BEDDING + BACKFILL

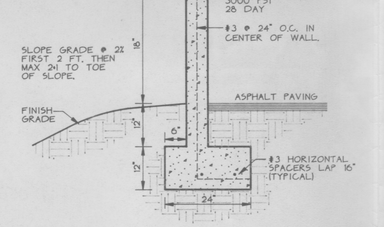
N.T.S.

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 10'

SEE DRAINAGE / GRADING PLAN SHEET 1 OF 2 FOR FINISH GRADE INFORMATION.



7 SOUTH STORM DRAIN PROFILE

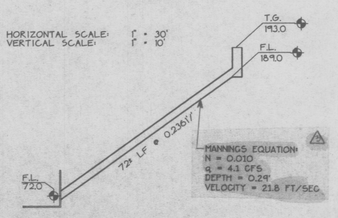


8 CONCRETE GRADE WALL

N.T.S.

SEE DRAINAGE / GRADING PLAN SHEET 1 OF 2 FOR FINISH GRADE INFORMATION.

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 10'

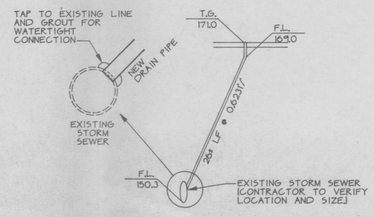


9 NORTH STORM DRAIN PROFILE

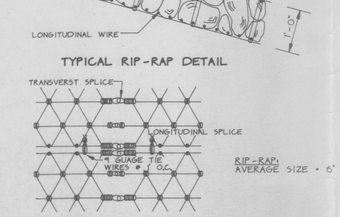
N.T.S.

SEE DRAINAGE / GRADING PLAN SHEET 1 OF 2 FOR FINISH GRADE INFORMATION.

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 10'



10 POND STORM DRAIN PROFILE



11 WIRE ENCLOSED RIP-RAP

ONSITE PRIVATE STORM DRAIN SYSTEM

The site drainage patterns are divided into two sub basins - the north portion (0.71 Ac. - comprised of parking and a small amount of landscaped area) and the south area (1.31 Ac. - comprised of the roof area and the remainder of the parking). The flows from the north area will collect against the north curb boardering the parking area and be routed to the west to be collected by a single storm inlet functioning in a ponding condition. Flows from the south area will collect against the south parking curb and flow short distances to be collected by three storm inlets, all functioning in ponding conditions.

As a function of the percentage of each area, the approximate flows from each sub basin will be:

North Area
35% of total, or 3.8 cfs, + 0.3 cfs offsite = 4.1 cfs to a single storm inlet.

South Area
65% of total, or 7.0 cfs to three storm inlets. The storm inlet nearest the loading dock area will be subjected to at least one half of the total flows of the south sub basin, or 3.5 cfs.

Grate Capacity
(Neenah Foundary Co - Cat No. R 4370-25 type G, 29" diameter)
Based on the flow distributions for the site, the largest grate capacity will need to handle a minimum of 4.1 cfs. All the grate sizes will be standardized to facilitate construction of the inlets, with the size/ capacity based on the minimum flow requirement.

For flow through a grate under ponding conditions, orifice type flow occurs. If the net open area is used as the orifice area, the dicharge can be computed using the orifice equation: $Q = CA(2gh)^{1/2}$, where C has a value of 0.60, A = area in sq. ft., g = the constant value 32.2, and h = depth in feet of water over the grate. For the above referenced grate, the clear opening space is 2.0 sf. Maximum depth of ponded water over the grate would be 0.5', which is a function of the curb height. Grate capacity would then equal 6.7 cfs. Reductions in the discharge due to trash accumulation, clogging or design variations could equal 30%, leaving an allowable capacity/grate of 4.7 cfs, which is greater than 4.1 cfs referenced above.

Storm Pipe Capacity
The north storm inlet will be intercepting 4.1 cfs. Using Kutters Formula for pipes flowing full, a 12" dia Ultra-rib PVC pipe has the capacity to carry 4.1 cfs for any slope greater than 0.85%. A 12" Ultra-rib PVC installed at any slope greater than 1% will handle the peak discharge draining directly into the north end of the detention pond. Available slope for the storm drain in this area approaches 25%.

The other three storm inlets will be intercepting flows from the south sub basin, or a total of 7 cfs. Using Kutters Formula for pipes flowing full, an 12" dia Ultra-rib PVC pipe has the capacity to carry 7 cfs for any slope greater than 2.0%. A 12" Ultra-rib PVC installed at a minimum of 2.0% will handle the peak discharge draining directly into the south end of the detention pond. Available slope for the storm drain in this area approaches 35%.

⚠ Energy Dissipation at Detention Pond
Initial energy dissipation will be provided by 90° horizontal bend at pipe outlets (see plan view). When pond begins to fill with water, energy dissipation will be provided by backwater.

⚠ Detention Pond Capacity
Using a graphical design to size the detention pond, a simplified synthetic hydrograph for the design storm and site development is plotted, with the undeveloped flow rate (3.8 cfs) serving as the outflow rate from the pond into the existing storm drainage system. The volume of detention is obtained by calculating the area between the hydrograph and the superimposed outflow rate, or 9351 CF (see graphic). Depth of ponded waters will average 4.2' deep for the designated pond area of 2237 SF. The top of the pond wall on the south and east sides should be constructed a minimum of 4.7' high to provide for freeboard, while the west wall should be constructed 0.5' lower to provide for a spillway area.

Grate at outflow pipe to be Neenah Foundary Co. - Cat. No. R 4350 Beehive Grate in a 12" concrete pipe (bell end). The outflow pipe into the existing storm drain will be sized according to the orifice equation, $Q = CA(2gh)^{1/2}$, where C has a value of 0.80, and the head equals 4.2'. Solving for the area, a = 0.29 SF. Checking Cutters formula for pipe flowing full for slope greater than 10%, capacity = 10 CFS. Therefore, pipe friction loss is not a controlling factor. Inlet control will govern. Connect 1-8" Ultra-rib PVC outlet from the detention pond to the existing storm drain. Cap pipe at inlet and drill a 7.9" diameter hole in pipe for orifice control.

TC = 12 MIN

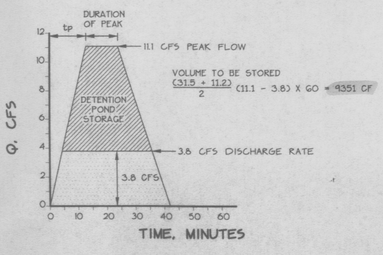
A_E = 2.7 ACRES (ON-SITE AND OFF-SITE) = 117,925 SF

$E = \frac{(0.53)(11,325) + (0.78)(4150) + (1.13)(14,500) + (2.12)(87,950)}{117,925} = 1.80$

$tp = \frac{(0.7)(12) + 8 - (5)(2.02)}{2.71} = 12.7$ min.

$tb = \frac{(121)(1.80)(2.71)}{11.1} - \frac{(15)(2.02)}{2.71} = 42$ min.

DURATION OF PEAK $= \frac{(15)(2.02)}{2.71} = 11.2$ min.



⚠ HYDROGRAPH

SCOPE:

The proposed improvements will be the new facilities for Airborne Express and will consist of the administration building and package handling area, employee/customer parking and access drives to University Blvd.

The present site is designated as Lot 6B-2 of the Airport Technical Center and is an undeveloped tract of land consisting of uneven topography with an overall drop to the west toward the University Golf Course. The adjacent lots to the north and south are also part of the subdivision and are presently undeveloped. University Blvd., a paved two-lane street without curb and gutter, boarders the east side of the site. Utilities in the area consist of a water main located within the University Blvd. R/W, with a sanitary sewer and storm drain located within a 40 foot wide easement along the west side of the site.

The intent of this plan is to show:

- Grading relationships between the existing ground elevations and proposed finished elevations in order to facilitate positive drainage to designated discharge points.
- The extent of proposed site improvements, including buildings, walks and pavement.
- The flow rate/volume of rainfall runoff across or around these improvements and methods of handling these flows to meet City requirements for drainage management and the previously approved master drainage plan for the Airport Technical Center.
- The relationship of onsite improvements with existing neighboring property to insure an orderly transition between proposed and surrounding grades.

DRAINAGE PLAN CONCEPT:

Runoff within the site will be routed to inlets located within the parking areas for collection by a private storm drainage system. The flows will then be routed to a detention pond situated at the southwest corner of the lot before being released into the existing storm drain, which is located along the west side of the site. The use of a detention pond is necessary to release the developed runoff at the current undeveloped rate to comply with the approved master drainage plan for the Airport technical Center.

GENERAL NOTES:

LEGAL: Lot 6B-1, Airport Technical Center, Bernalillo County, NM.

SURVEYOR: Jeff Mortensen and Associates

B.M.: City of Albuquerque benchmark (2-N16), a standard C.O.A. brass cap set in concrete monument stamped "2-N16" and projecting 0.1 ft. above ground near the SW corner of Albuquerque International Airport in an open prairie. Elev. = 5304.88 ft. (M.S.L.D.)

T.B.M.: Railroad spike in power pole. Elev. = 5200.94 ft. (M.S.L.D.)

SOILS: The SCS Soil Survey of Bernalillo County indicates that the soil is (Cu), cut-and-fill land, a sandy loam and very gravely sand.

FLOOD HAZARD: Per FEMA Floodway maps, the property does not lie within a flood zone.

OFF-SITE DRAINAGE: Approximately 0.26 acres of undeveloped land north of the site drains across the site. These flows will be temporarily routed through the site for discharge via the proposed improvements. Future development of the adjacent area will isolate this site from the effects of these minor flows.

EROSION CONTROL: The contractor is responsible for containing all sediment generated during construction by means of a temporary earthen berm or silt fence located at the lowest point near the southwest corner of the site.

CALCULATIONS:

Calculations are based on the Development Process Manual, Vol. 2 Design Criteria, August, 1991. Design based on a 100 year, 6 -storm, in Precipitation Zone 2

AREA OF SITE:
Area of site = 2.4471 Ac.

SITE

Undeveloped Land Conditions		Developed Land Conditions	
A_A =	106,600 SF	A_A =	0 SF
A_B =	0 SF	A_B =	4,150 SF
A_C =	0 SF	A_C =	14,500 SF
A_D =	0 SF	A_D =	87,950 SF
TOTAL =	106,600 SF	TOTAL =	106,600 SF

Onsite Weighted Excess Precipitation (100-Year, 6-Hour Storm-Precipitation Zone 2):

Weighted E $= \frac{E_A A_A + E_B A_B + E_C A_C + E_D A_D}{A_A + A_B + A_C + A_D}$

Undeveloped $= \frac{(0.53)(106,600)+(0.78)(0)+(1.13)(0)+(2.12)(0)}{106,600} = 0.53"$

Developed $= \frac{(0.53)(0)+(0.78)(4,150)+(1.13)(14,500)+(2.12)(87,950)}{106,600} = 1.93"$

Undeveloped Volume of Runoff: $V_{360} = \frac{(0.53)(106,600)}{12} = 4,708$ CF

Developed Volume of Runoff: $V_{360} = \frac{(1.93)(106,600)}{12} = 17,145$ CF

Onsite Peak Discharge Rate:

$Q_P = Q_{P_A} A_A + Q_{P_B} A_B + Q_{P_C} A_C + Q_{P_D} A_D$

Undeveloped $= \frac{(1.56)(106,600)+(2.28)(0)+(3.14)(0)+(4.70)(0)}{43,560} = 3.8$ CFS

Developed $= \frac{(1.56)(0)+(2.28)(4,150)+(3.14)(14,500)+(4.70)(87,950)}{43,560} = 10.8$ CFS

OFFSITE

Offsite Land Condition

A_A =	11,325 SF
A_B =	0 SF
A_C =	0 SF
A_D =	0 SF
TOTAL =	11,325 SF

Offsite Peak Discharge Rate:

$Q_P = Q_{P_A} A_A + Q_{P_B} A_B + Q_{P_C} A_C + Q_{P_D} A_D$

$= \frac{(1.56)(11,325)+(2.28)(0)+(3.14)(0)+(4.70)(0)}{43,560} = 0.3$ CFS

TOTAL FLOWS:

Peak Flow To Detention Pond:

10.8	cfs onsite
0.3	cfs offsite
11.1	cfs total

CHRISTOPHER L. WEISS — NEW MEXICO — REGISTERED PROFESSIONAL ENGINEER — 12673 — 3/10/93

REVISIONS
1-5 3/10/93

DESIGNED	D.JD
DRAWN	D.JD
CHECKED	C.L.W.

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AIRBORNE
DRAINAGE / GRADING PLAN

SHEET 2 OF 2

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